### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization International Bureau





### (43) International Publication Date 17 July 2003 (17.07.2003)

### **PCT**

# (10) International Publication Number WO 03/057948 A1

- (51) International Patent Classification<sup>7</sup>: C25F 3/00, 7/00, B23H 3/02, H01L 21/3063
- (21) International Application Number: PCT/JP03/00038
- (22) International Filing Date: 7 January 2003 (07.01.2003)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 2002-1737

8 January 2002 (08.01.2002)

- (71) Applicant (for all designated States except US): EBARA CORPORATION [JP/JP]; 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 (JP).
- (71) Applicant and
- (72) Inventor: MORI, Yuzo [JP/JP]; 8-16-19, Kisaichi, Katano-shi, Osaka 576-0033 (JP).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): SHIRAKASHI,

Mitsuhiko [JP/JP]; c/o Ebara Corporation, 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 (JP). KUMEKAWA, Masayuki [JP/JP]; c/o Ebara Corporation, 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 (JP). YASUDA, Hozumi [JP/JP]; c/o Ebara Corporation, 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 (JP). KOBATA, Itsuki [JP/JP]; c/o Ebara Corporation, 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 144-8510 (JP). TOMA, Yasushi [JP/JP]; c/o Ebara Research Co., Ltd., 2-1, Honfujisawa 4-chome, Fujisawa-shi, Kanagawa 251-8502 (JP).

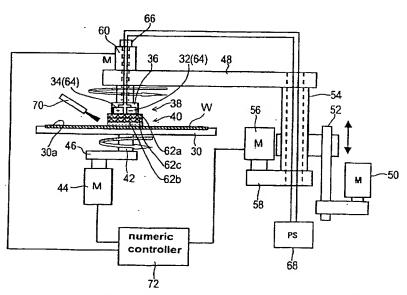
- (74) Agents: WATANABE, Isamu et al.; GOWA Nishi-Shin-juku 4F, 5-8, Nishi-Shinjuku 7-chome, Shinjuku-ku, Tokyo 160-0023 (JP).
- (81) Designated States (national): CN, KR, US.
- (84) Designated States (regional): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR).

#### Published:

with international search report

[Continued on next page]

#### (54) Title: ELECTROLYTIC PROCESSING APPARATUS AND METHOD



(57) Abstract: There is provided an electrolytic processing apparatus and method that can effect processing of a substrate with high processing precision and can produce an intended form of processed substrate with high accuracy of form. The electrolytic processing apparatus includes: a holder (30) for holding a substrate (W); a processing electrode (32) that can come close to the substrate; a feeding electrode (34) for feeding electricity to the substrate; an ion exchanger (40) disposed in the space between the substrate and the processing electrode, or the substrate and the feeding electrode; a fluid supply section (70) for supplying a fluid into the space; a power source (68) for applying a voltage between the processing electrode and the feeding electrode; a drive sections (44, 56 and 60) for allowing the substrate and the processing electrode, facing each other, to make a relative movement; and a numerical controller (72) for effecting a numerical control of the drive sections.